

China Renewable Energy 17 Jan 24

Industry SnapShot

January 17, 2024

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Length: 6615 words

Body

This Week's News

China Daily - Xizang marks milestone in green energy production - 16/1/2024

The Xizang autonomous region has made substantial progress in clean energy, with more than 90 percent of its energy supply now drawn from sustainable sources.

For the complete story see:

<https://www.chinadaily.com.cn/a/202401/16/WS65a6277ea3105f21a507c8db.html>

PV Magazine - Das Solar claims record open-circuit voltage of 742 mV for n-type solar cell - 16/1/2024

Das Solar has achieved a world-record open-circuit voltage of 742 mV for an M10 n-type tunnel oxide passivated contact (TOPCon) solar cell, with a power conversion efficiency of 26.33%.

For the complete story see:

<https://www.pv-magazine.com/2024/01/16/das-solar-claims-record-open-circuit-voltage-of-742-mv-for-n-type-solar-cell/>

Yicai Global - China's Jinko Topples Longi to Regain Crown as World's Top Solar Panel Maker - 15/1/2024

Jinko Solar was the world's biggest photovoltaic module supplier in 2023, ousting rival Longi Green Energy Technology for the first time since 2019.

For the complete story see:

<https://www.yicaiglobal.com/news/chinas-jinko-topples-longi-to-regain-crown-as-worlds-top-solar-panel-maker>

Other Stories

PV Tech - Tongwei plans US\$3.9 billion investment to boost silicon production - 15/1/2024

Ewind - China promotes expansion of wind and photovoltaic capacity - 14/1/2024

China Daily - China Energy achieves green milestone - 12/1/2024

CGTN - Capturing wind 3,000m high: China's high-altitude wind power project starts operation - 11/1/2024

Reuters - China dominates renewable energy and coal power forecasts - 11/1/2024

Media Releases

Dongfang Electric Corporation Limited (HKEX: 1072, SSE: 600875) - DEC Wins the Bid of a 110 MW Offshore Wind Farm in East China - 12/1/2024

Latest Research

The impact of digital economy on renewable energy development in China - By Mingbo Zheng, Chun Yee Wong

Industry Overview

Renewable Energy Industry In China

Chinese Renewable Energy Industries Association (CREIA)

Overviews of Leading Companies

China Longyuan Power Group Corporation Limited (HKEX: 916)

CSUN Solar Tech Co., Ltd.

Comtec Solar Systems Group Limited (HKEX: 712)

Dongfang Electric Corporation Limited (HKEX: 1072, SSE: 600875)

Elion Resources Group Limited (SSE: 600277)

ST Sinoval Wind Group Co., Ltd. (SSE: 601558)

Xinjiang Goldwind Science & Technology Co., Ltd (HKEX: 02208, SZSE: 002202)

Associate: Danny Cliffson Crispin Benos

News and Commentary

China Daily - Xizang marks milestone in green energy production - 16/1/2024

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PV Tech - Tongwei plans US\$3.9 billion investment to boost silicon production - 15/1/2024

Chinese manufacturer Tongwei is to invest RMB28 billion (US\$3.9 billion) in expanding its silicon production capacity.

For the complete story see:

<https://www.pv-tech.org/tongwei-plans-us3-9-billion-investment-to-boost-silicon-production/>

Ewind - China promotes expansion of wind and photovoltaic capacity - 14/1/2024

China had a key role to play in the world's rapid expansion of renewable power generation capacity last year.

For the complete story see:

<https://www.ewind.es/2024/01/14/china-promotes-expansion-of-wind-and-photovoltaic-capacity-iea/95938>

China Daily - China Energy achieves green milestone - 12/1/2024

China Energy Investment Corp, achieved a record in installed renewable energy projects last year, as the company accelerated its green energy transition while ensuring domestic energy security.

For the complete story see:

<https://www.chinadaily.com.cn/a/202401/12/WS65a091b9a3105f21a507be96.html>

CGTN - Capturing wind 3,000m high: China's high-altitude wind power project starts operation - 11/1/2024

China's first megawatt-level high-altitude wind power demonstration project successfully generated electricity on Sunday in east China's Anhui Province.

For the complete story see:

<https://news.cgtn.com/news/2024-01-11/China-s-high-altitude-wind-power-project-starts-operation-1qh7vxYHTYk/p.html>

Reuters - China dominates renewable energy and coal power forecasts - 11/1/2024

China's status as the colossus of renewable energy is set to be cemented in the next five years, with the world's second-biggest economy adding more capacity than the rest of globe combined.

For the complete story see:

<https://www.reuters.com/business/energy/china-dominates-renewable-energy-coal-power-forecasts-russell-2024-01-11/>

Media Releases

Dongfang Electric Corporation Limited (HKEX: 1072, SSE: 600875) - DEC Wins the Bid of a 110 MW Offshore Wind Farm in East China - 12/1/2024

DEC has secured the bid of a 110 MW offshore wind farm in East China, which will feature 11×10 MW wind turbines.

With a rotor diameter of 185 m, each of these typhoon-resistant units is set to provide 40 GWh of clean power annually at an average wind speed of 10 m/s, equivalent to cutting standard coal consumption by 13,000 tons and CO₂ emissions by 35,000 tons.

<https://www.dongfang.com.cn/info/1017/1907.htm>

Latest Research

The impact of digital economy on renewable energy development in China

Mingbo Zheng, Chun Yee Wong

Abstract

Digital economy has been the essential driving force for green development and energy transition, while the role of digital economy in the development of renewable energy remains limited. This paper explores how digital economy development alters renewable energy in China. Based on the panel data of 31 provinces and the fixed effects model, this paper finds a positive association between digital economy and renewable energy development. The digital economy exhibits a stronger positive impact on hydro energy compared to wind energy and solar energy. Local government intervention can enhance the positive association between digital economy and hydro energy development, while reducing the positive effect of digital economy on wind energy and solar energy development. We also find that digital economy produces larger promoting effects on renewable energy development in the central and western provinces compared with the eastern provinces.

<https://www.sciencedirect.com/science/article/pii/S2949753123000620>

The Industry

China's New Plan for Renewable Energy Development Focuses on Consumption - Latest Publish date: 19 June, 2022

China's focus on consumption penetration for renewable energy development in its recently released 14th five-year plan - 2021 to 2025 - rather than capacity installations, should add flexibility in adding installations and alleviate curtailment risk, says Fitch Ratings.

China targets for renewables to supply 33% to national power consumption by 2025, and for non-hydro renewables to contribute 18%; the two consumption quota targets are 4.3pp and 3.6pp higher than 2021 levels, respectively. Correspondingly, China expects to increase annual renewable generation to 3,300 terawatt hours by 2025, implying a CAGR of 7%-8% in the next four years.

The 14th five-year plan does not specify a target for renewable power capacity, unlike previous plans. This should allow for more flexibility on annual capacity additions in 2022-2025, which can instead be driven by power demand growth and the power system's ability to consume the newly added installations.

Such flexibility in capacity installations should also alleviate curtailment risk from oversupply, supported by the fast development of storage systems, combined with the well-planned locations of new projects, including at large renewable bases that will contribute the majority of new installations under the plan. Most renewable bases will be located at load centres, such as Hebei and Shandong, or in desert and deserted areas, including those in Inner Mongolia and Gansu, where land is cheaper, renewable resources are abundant and UHV lines - which transmit power intra-provincially to specific load centres - are established or will become available.

New projects with grid offtakes can sell pre-agreed volume at fixed prices, but the amount of renewable power generated in excess of the offtake volume and projects without grid offtakes will be traded in the market. The 14th five-year plan encourages renewable generation companies and end-users to enter long-term contracts. Trading premiums are likely to occur in coastal regions, where renewable resources are limited, but demand for green

energy is increasingly robust, while renewable power produced in provinces with excess supply may be traded at a discount.

We also expect stronger enforceability of the 14th five year plan, which was released by the National Development and Reform Commission (NDRC), China's central regulator, jointly with eight central-government bodies, including the Ministry of Finance, Ministry of Natural Resources, Ministry of Housing and Rural-Urban Development and Ministry of Ecology and Environment, which are responsible for approving and facilitating the development of renewable projects or monitoring the consumption levels. Previous plans were normally introduced by NDRC alone.

We expect China to maintain strong renewable installation growth, despite the lack of capacity targets specified for end-2025. We estimate that China is likely to boost annual wind and solar power capacity by 100-110 gigawatts (GW) on average, assuming national power demand grows at a CAGR of 4.7% in the next four years. Our estimated capacity additions are comparable with the 103GW installed in 2021, but below the 2020 peak of 120GW. However, provincial and corporate level end-2025 targets, if added, suggest faster capacity additions. We thus expect capex and leverage at most state-owned power generation companies to stay high over the medium term.

For the first time, the five-year plan sets goals on the usage of non-power renewable energy, such as heating by solar, geothermal and biomass. This may encourage favourable policies on integrated energy and support the earnings of city-gas operators and national oil companies, which are becoming active in developing non-carbon energy businesses.

<https://www.fitchratings.com/research/corporate-finance/chinas-new-plan-for-renewable-energy-development-focuses-on-consumption-19-06-2022#:~:text=Fitch%20Ratings%2DBeijing%2D19%20June,curtailment%20risk%2C%20says%20Fitch%20Ratings>

Last Publish Date: 29 September, 2021

By accelerating its clean energy transition, China can secure major economic, innovation and employment benefits while helping the world move nearer to achieving shared climate goals.

China's remarkable economic growth over the past four decades has lifted hundreds of millions of people out of poverty, turning the country into a leader in many industries but also the world's largest carbon emitter, accounting for one-third of global carbon dioxide (CO₂) emissions. China provides more than half of the world's steel and cement, but the CO₂ emissions from just those two sectors in China are higher than the European Union's total CO₂ emissions.

China is aiming to reach a peak in its CO₂ emissions before 2030 and carbon neutrality before 2060. The energy sector is the source of almost 90% of China's greenhouse gas emissions, putting energy policies at the heart of the country's transition to carbon neutrality. A new IEA report released today - An Energy Sector Roadmap to Carbon Neutrality in China - explores how China can reach its objectives while ensuring energy security and affordability for its citizens. It shows that the required investments are well within China's capacities, given the size and dynamism of its economy. The report responds to the Chinese government's invitation to the IEA to cooperate on long-term strategies.

"China is a clean energy powerhouse and has played a leading role in many of the world's success stories to date, from solar power to electric vehicles," said Fatih Birol, the IEA Executive Director. "China's efforts to achieve its ambition of carbon neutrality will result in even greater flourishing across a wider array of low-carbon technologies and a significant decline in fossil fuel use in the coming decades."

"However, the really uplifting news is that our new Roadmap shows China has the means and capabilities to accomplish an even faster clean energy transition that would result in greater social and economic benefits for the Chinese people and also increase the world's chances of limiting the rise in global temperatures to 1.5 °C," Dr Birol added. "This accelerated transition would put China's CO₂ emissions into marked decline after 2025, opening up

the possibility of China reaching carbon neutrality well before 2060. This would be both good for China and good for the world."

China has made notable progress in its clean energy transition, but it still faces some significant challenges. Coal accounts for over 60% of electricity generation, and China continues to build new coal power plants domestically. At the same time, China has added more solar power capacity than any other country year after year. It is the second largest oil consumer in the world, but it also home to 70% of global manufacturing capacity for electric vehicle batteries.

At the same time, reaching China's climate targets cannot rely solely on the rollout of renewables and electric vehicles. It will need to involve solutions to tackle emissions from its huge existing fleet of fossil fuel-based power plants, steel mills, cement kilns and other industrial facilities. If the existing emissions-intensive energy infrastructure in China continues to operate in the same way as it does today, its CO₂ output between now and 2060 would amount to one-third of the global carbon budget for limiting the global temperature rise to 1.5 °C. This is aside from any new plants that may be built to meet growing demand.

The China Roadmap sets out a pathway consistent with the enhanced ambitions that China announced last year in which CO₂ emissions reach a peak before 2030 and carbon neutrality is achieved before 2060. The main drivers of emissions reductions between now and 2030 in this pathway are energy efficiency improvements, expansion of renewables and a reduction in coal use. Electricity generation from renewables, mainly wind and solar PV, increases seven-fold between 2020 and 2060, accounting for almost 80% of China's power mix by then. Industrial CO₂ emissions decline by nearly 95% by 2060, with the role of emerging innovative technologies, such as hydrogen and carbon capture, growing strongly after 2030. These changes will boost China's labour market, with more new jobs created in growing low-carbon energy technologies than are lost in declining fossil fuel industries.

The Roadmap also explores the opportunities for China to pursue - and benefit from - an even faster clean energy transition, which would result in China's CO₂ emissions declining to almost 20% below their current level by 2030. On top of the major advantages that come from reducing the impact of climate change, the social and economic benefits include greater prosperity for regions that have not yet fully benefited from China's economic development and a bigger net gain in job creation nationwide. And investment needs are not a barrier for the faster transition, since the cumulative investments are similar to those in the slower one.

"This Roadmap shows what is possible: China has a clear pathway to build a more sustainable, secure and inclusive energy future," Dr Birol said. "As China makes some important decisions in the coming weeks and months, the IEA is pleased to share our analysis and global expertise with Chinese policy makers so that together we can help build a brighter future. I also welcome President Xi Jinping's announcement last week that China will stop building coal power plants overseas as a further positive step towards curbing global emissions."

<https://www.iea.org/news/china-has-a-clear-pathway-to-build-a-more-sustainable-secure-and-inclusive-energy-future>

The Chinese Renewable Energy Industries Association (CREIA)

The Chinese Renewable Energy Industries Association (CREIA) was established in 2000 with the support of the United Nations Development Programme (UNDP), the Global Environment Facility (GEF) and the State Economic and Trade Commission (SETC). CREIA obtained legal registration as the Renewable Energy Professional Division of the China Comprehensive Resource Utilization Association from the Ministry of Civil Affairs on March 25, 2002. CREIA has attracted distinguished membership of more than 200 from industry, academics, organizations and individual experts.

Functions of CREIA

During its operation, CREIA established the following priority functions in order to maximize its services to members:

CREIA serves as a bridge between regulatory authorities, research institutes, and industry professionals, in order to provide a forum to discuss renewable energy development at the national level and subsequently advise the Government of China on strategic policy formulation.

CREIA acts as a window to bring together national and international project developers and investors. It promotes technology transfer and raises awareness of renewable energy investment opportunities through an online Investment Opportunity Facility and regional networking and training activities.

CREIA provides a network for its members from the Chinese renewable energy business community without access to communication within their sub-sectors, and provides a platform to voice their concerns collectively.

Mission of CREIA

CREIA promotes the adoption of advanced technologies among renewable energy enterprises in China and actively develops capacity for the rapid industrialization of the Chinese renewable energy sector .

<http://www.creia.net/aboutus/>

Leading Companies

China Longyuan Power Group Corporation Limited (HKEX: 916)

China Longyuan was established in 1993. At that time, it was affiliated to the China National Department of Energy. Later, it was turned to be affiliated to the Ministry of Electric Power and State Power Corporation, then it was put under the former China Guodian Corporation in the 2002 power system reform. In 2017, China Guodian Corporation and Shenhua Group merged and reorganized, and China Longyuan was put under China Energy.

China Longyuan has long been representing the country in the research and development of new energy technologies. It is the earliest specialized company to develop wind power in China. It was successfully listed in Hong Kong in 2009, setting a number of firsts including the largest financing in overseas initial public offerings by Chinese power companies and the highest price-earnings ratio. It is known as the "First Chinese Stock of New Energy". It became the world's largest wind power operator in 2015. By the end of 2018, China Longyuan had an installed capacity of 21,044 MW, of which wind power had an installed capacity of 18,919 MW, and continued to maintain its position as the world's largest wind power operator. After 26 years of development, the company has become a large comprehensive power group focusing on the development and operation of new energy. Its business is distributed in 32 provinces and cities in China and Canada, South Africa and other countries.

Based on good business performance, the company has won many awards such as Best Management, 13th Five-Year Most Investment Value, Most Brand Value and Best Listed Company in the Golden Bauhinia Awards. It has been rated as Global Top 500 New Energy Enterprises for 6 consecutive years, and won the National May 1st Labor Award granted by the All-China Federation of Trade Unions for the highest honor of enterprises and institutions, and was awarded the honorary title of National Civilized Unit by the Spiritual Civilization Development Steering Commission.

http://www.clypg.com.cn/lydlwwEn/gsjj/list_gsjj.shtml

29 August 2023

INTERIM RESULTS ANNOUNCEMENT FOR THE SIX MONTHS ENDED 30 JUNE 2023

FINANCIAL HIGHLIGHTS

- For the six months ended 30 June 2023, revenue amounted to RMB19,847 million, representing a decrease of 8.4% over the corresponding period of 2022
- For the six months ended 30 June 2023, profit before taxation amounted to RMB6,999 million, representing an increase of 10.9% over the corresponding period of 2022

- For the six months ended 30 June 2023, net profit attributable to equity holders of the Company amounted to RMB5,124 million, representing an increase of 18.3% over the corresponding period of 2022
- For the six months ended 30 June 2023, earnings per share amounted to RMB0.5997, representing an increase of RMB0.0945 over the corresponding period of 2022

The board of directors (the "Board") of China Longyuan Power Group Corporation Limited* (the "Company") is pleased to announce the unaudited consolidated interim results of the Company and its subsidiaries (the "Group") for the six months ended 30 June 2023, together with comparative figures for the corresponding period of 2022. The results were prepared in accordance with the International Accounting Standards ("IAS") 34, Interim Financial Reporting, issued by the International Accounting Standards Board ("IASB") and the disclosure requirements under the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the "Listing Rules").

For full release see:

<http://www.clypg.com.cn/lydlwwEn/lsgg/202308/27eee5fd7ead47ae94a2acc891028cab/files/30a6ac11297d41d9852dbc9fe7f222c6.pdf>

CSUN Solar Tech Co., Ltd.

CSUN is a global leading R&D and manufacturer of high- performance PV materials and solar modules. It leads the research direction of high-performance PV technology around the world. In past decade, CSUN has already supplied over 15GW solar modules to the worldwide.

CSUN possess 2.5GW design production capacity of solar modules with 7 manufacturing centers in China, USA, Turkey, South Korea and Vietnam. On the strength of its continuous technological innovation, well-established global sales and customer service network, CSUN has covered USA, Germany, Spain, Australia, India and some other key markets around the world.

<https://www.csunsolartech.com/about-us/>

Comtec Solar Systems Group Limited (HKEX: 712)

Comtec Solar is a pure-play monocrystalline solar ingot and wafer manufacturer based in China and Malaysia that focuses on the design, development, manufacturing and marketing of high-quality solar wafers. We are the first such manufacturers in China to be qualified by overseas customers for massive production of N-type monocrystalline solar wafers with a thickness of approximately 140 microns.

As one of the pioneers in the manufacture of semiconductor wafers in China since 2000, we started to manufacture ingots and wafers for solar uses from 2004. Since then, our main focus has shifted to the solar industry to cater to the increasing demand for our top-quality products. We have also taken advantage of the advanced technology, knowledge base and manufacturing experience we developed and accumulated during the manufacture of semiconductor wafers. The successful transfer of know-how allows us to provide our customers with top-quality solar products.

As our first priority, we have, therefore, been able to fully exploit our original role and concentrate our resources on the enhancement of product quality, as well as the development of new and innovative solar wafers. Our research and development capabilities, together with our manufacturing experience, have resulted in proprietary ingot-growing and slicing process technology with improved energy consumption efficiency. As we believe that long-term success in the solar industry will depend largely on product quality and cost competitiveness through superior manufacturing processes, we are committed to dedicating significant resources to new technology and a continuous improvement program.

Our company was successfully listed on the Main Board of The Stock Exchange of Hong Kong on Oct.30 of 2009. Being the only solar company, which successfully closed an IPO on a major stock exchange under the challenging

economic environment in 2009, we obtained worldwide supports from investors. The IPO proceeds have contributed the source of funding for the Group's long-term development and increase our production capacity.

We have set up production facilities in Shanghai and Jiangsu. Our capacity is approximately 600MW. A further expansion of production capacity would be made in Malaysia.

After completing the expansion of our production capacity, we would be able to further strengthen our worldwide customer base, and keep our leading statue in Mono Wafer Manufacturing market.

<http://www.comtectsolar.com/en/WebContent.aspx?BID=12&SID=38>

29 August 2023

ANNOUNCEMENT OF INTERIM RESULTS FOR THE SIX MONTHS ENDED 30 JUNE 2023

HIGHLIGHTS

- Revenue for the Period was approximately RMB15.4 million, representing a decrease of 9.1% from approximately RMB17.0 million for the corresponding period in 2022;
- Gross profit for the Period was approximately RMB4.9 million for the Period, representing a decrease of 15.7%, from approximately RMB5.8 million gross profit for the corresponding period in 2022;
- Gross profit margin for the Period was 31.5%, comparing to the gross profit margin of 33.9% for the corresponding period in 2022;
- As part of the Group's strategy of removing the capital-intensive, less efficient upstream business, on 1 June 2022, the Company has announced the disposal of certain properties in Shanghai at a consideration of RMB180 million. The Disposal was completed and the Group recorded a net gain on the disposal of properties of approximately RMB68.1 million during the Period. The properties comprise of two land use rights and seven factory buildings. The Group continues to persevere in developing our solar businesses, including investment, development, construction and operation of solar photovoltaic power stations, and the production and sale of the power storage products.
- Net profit attributable to the owners of the Company for the Period was approximately RMB49.3 million, representing an increase by approximately 503%, from the net loss attributable to the owners of the Company of approximately RMB12.2 million for the corresponding period in 2022;
- Our earning per share (basic) for the Period was RMB6.22 cents, comparing to the loss per share of 1.55 cents for the corresponding period in 2022; and
- The Group has significantly improved its financial position. As at 30 June 2023, the Group's total liabilities was approximately RMB283.1 million, having reduced from the total liabilities of approximately RMB467.1 million as at 31 December 2022. The gearing ratio (total liabilities divided by total equity) as at 30 June 2023 was 2.2, improving from the gearing ratio of 2.8 as at 31 December 2022

INTERIM RESULTS

The Board of the Company is pleased to announce the unaudited interim results and condensed consolidated financial statements of the Group for the six months ended 30 June 2023, together with the comparative figures for the corresponding period in 2022. These results have been reviewed by the Company's audit committee, comprising all of the independent non-executive Directors, with one of them chairing the committee.

For full release see:

http://comtectsolar.com/UpFile/OtherInfo_Sub_Class/202308291040282472_2.pdf

Dongfang Electric Corporation Limited (HKEX: 1072, SSE: 600875)

Dongfang Electric Corporation (DEC) is one of the backbone enterprise groups directly supervised by Chinese Central Government. With its headquarter in Chengdu, the capital city of Sichuan Province, which is named as the "Heavenly Land on Earth" and the "Hometown of Giant Panda", DEC has blossomed into one of the world largest power generating equipment manufacturers and international project contractors. Presently, the accumulative output capacity of DEC has outnumbered 500GW while yearly output topping the world for 14 consecutive years.

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With the development of more than 60 years, DEC has become a comprehensive group specialized in manufacturing of power equipment, R&D of cutting edge technology, contracting international engineering projects, exporting complete plants and equipment, and conducting international economic and technical cooperation. Due to its distinguished capacity and contribution, DEC represents the top class technological and manufacturing level for China's heavy machinery and equipment industry, and is appointed by the Chinese Central Government as one of the most important state-owned enterprise groups concerning the national economy.

As the national strategic base for heavy-duty machinery and equipment, DEC has possessed comprehensive technical R&D abilities and is honored by the Central Government as a National Research & Development Center. With its endeavor and hardworking, DEC not only has achieved the annual production of power generating equipment for more than 40,000MW consisting of hydro, thermal, nuclear, wind, solar and combine-cycle generating unit, enjoying one-third domestic market share in thermal power and two-fifths in hydro power, but also has been diversifying its manufacturing industries to various fields such as desulphurization and denitrification, hydrogen fuel cells, high-voltage large power frequency converter, industrial control devices, desalination equipment and so on.

Being an active international Contractor, DEC takes the lead in China particularly in contracting international power projects and a wide variety of large engineering projects, and exports complete plants and equipment to almost 80 countries involving projects in such diverse fields as power generation, electric and mechanical works, power distribution and transmission, railways, environmental protection, traffic and transportation, communication etc., from which DEC has gained recognition worldwide and has been selected as one of The Top 250 International Contractors by the well-reputed Engineering News Record of USA since 1994.

Adhering to the principles of Factualistic, Innovative, Harmonious and Initiative, DEC will be constantly dedicated and devoted to be a responsible company, responsible for the products, responsible for the services, responsible for the customers and responsible for the society. DEC, a company from a historical and ancient land, is embarked on striving towards the goal of becoming a domestically leading and internationally competitive group, and is ready to work with our friends all over the world and share our experiences to achieve the mutual development.

<http://www.dongfang.com.cn/index.php?s=/Home/Article/lists/category/49.html>

Elion Resources Group Limited (SSE: 600277)

Elion Resources Group Co., Ltd. engages in ecosystem restoration, environmental protection, clean energy, and finance businesses. Its ecosystem restoration business provides ecologically restoration of desert land to be used as farming land; services for large-scale ecological projects, such as dredging of urban rivers, greening projects, and construction of sponge cities; desert eco-business model that includes ecological husbandry, ecological health, eco-tourism, eco-solar energy, and ecological industry; and other eco-cities projects construction and reconstruction in Ordos, Ulanqab in Inner Mongolia, Gu'an in Hebei province, and Ningde in Fujian province. The company's clean energy business engages in electricity generation, trees planting, and grass planting and breeding; production of solar energy in Kubiqi desert, Akesai County of Gansu Province, Ulan Buh of Inner Mongolia, and southern Xinjiang, as well as natural gas terminal operations. In addition, the company's finance industry business includes

trust, equity investment fund, finance, financial leasing, carbon trading, and Internet finance operations. Elion Resources Group Co., Ltd. was founded in 1988 and is based in Beijing, China.

<https://www.nrgedge.net/company/elion-resources-group-company-limited>

ST Sinoval Wind Group Co., Ltd. (SSE: 601558)

Sinoval Wind Group Co., Ltd. (Shanghai Stock Exchange: 601558) is the first Chinese high-tech enterprise to have specialized in the independent development, design, manufacturing and sale of large-scale onshore, offshore and intertidal wind turbines, which are adaptable to a variety of global environmental conditions and wind resources. Sinoval is also the first Chinese enterprise to have independently developed a series of 5MW and 6MW wind turbines. As of 2018, the cumulative installed generating capacity of Sinoval wind turbines reached a total of 16,524MW which ranked 4th in the domestic market, the cumulative installed offshore generating capacity of Sinoval wind turbines reached a total of 170MW, the cumulative installed generating capacity of Sinoval wind turbines in overseas market reached a total of 388.5MW.

Sinoval is creating a "New Energy Integrated Solution Provider" as a core strategy, has placed "Responsibility, Regulation and Implementation" at the center of its corporate culture. Sinoval remains committed to offering cutting-edge technology, innovative products, professional service and exceptional management. It is through these core competencies that Sinoval has become a leading innovator in China's wind power equipment manufacturing industry:

Sinoval is the first company in China to have introduced globally-advanced MW-level wind turbine technologies, having developed a 1.5MW series of wind turbines adaptable to a global variety of wind resources and environmental conditions. Sinoval was also the first domestic enterprise to establish a complete supply chain for the localization and scale production of MW-level wind turbines.

Sinoval is the first Chinese turbine manufacturer to successfully research, develop and mass produce the global mainstream 3MW series of onshore, offshore and intertidal wind turbines with independent intellectual property rights.

Sinoval is the first Chinese enterprise to complete the development and production of 5MW and 6MW wind turbines with independent intellectual property rights.

Sinoval supplied all 34 sets of 3MW wind turbines for the Shanghai Donghai Bridge Offshore Wind Farm project, which is the first offshore wind farm built outside of Europe and is also China's first offshore wind farm demonstration project. At present, all the units of this project have been through warranty period. Thus, the project has become the first domestic offshore wind power project which passed 5 years of operation tests and warranty period.

Sinoval is building the National Offshore Wind Power Technology and Equipment R&D Center, which features cutting-edge technology, state-of-the-art equipment and facilities, and specialized R&D laboratory capabilities. Sinoval is also pioneering the development of an integrated base for the manufacturing, assembly, testing, transportation and installation of large-scale offshore wind turbines.

Looking to the future, Sinoval remains unwavering in its commitment to innovation and its pursuit to bring cutting-edge products to market. Sinoval will continue to transcend across multiple fronts in its ongoing effort to create itself as the most competitive new energy integrated solution provider.

<http://www.sinoval.com/english/about/?30.html>

Xinjiang Goldwind Science & Technology Co., Ltd (HKEX:02208, SZSE: 002202)

Goldwind is a trusted global strategic partner in clean energy. As a company, we are committed to promoting energy transformation to ensure access to affordable, reliable, and sustainable energy for all - further Driving a Renewable Future. Specializing in energy development, energy devices, energy services, and energy use,

Goldwind leverages its global network of scientific research innovation and best business practices to take renewable energy utilization and efficiency to new heights. As an SZSE and HKEX listed company, Goldwind has repeatedly been recognized as: "Corporate Climate Leader", "Most Respected Company in Asia", and "Best Investor Relations Company", and awarded "Top 50 Most Innovative Companies in the World", "Carbon Clean200", "Top 500 Global New Energy Companies", "New Fortune Best Listed Companies", "Fortune Top 500 Chinese Companies, and other accolades.

Since we started our business, we have witnessed and experienced the growth and prosperity of China's renewable energy industry and established our presence in the global market with comprehensive and in-depth internationalization capabilities. Goldwind's business network covers 32 countries across six continents, with eight R&D centers worldwide that constitute the key drivers of our success and leading position in cutting-edge technology and development. We have about 10,000 employees worldwide, including nearly 3,000 research and development (R&D) and technical personnel. With eight overseas regional centers in North America, South America, Europe, Africa, Australia, Asia, Middle East and North Africa, and the Russian-speaking part of Central Asia, we have fully realized the internationalization of capital, market, technology, talents and management.

So far, we have delivered over 44,000 wind turbines all over the world with a global cumulative installed capacity exceeding 86GW and an operations and maintenance (O&M) service capacity exceeding 50GW. To promote global energy transformation, Goldwind has thoroughly integrated renewable energy and digital technology. We are actively building zero-carbon solutions for new power system, and optimizing and reconstructing source-grid-storage-load to create an innovative energy asset management model, so we can fully contribute to "carbon neutrality" through a smarter Internet of Energy. In the field of water treatment and environmental protection, Goldwind focuses on the investment and development, construction and operation, and technological innovation of water assets. Our scope of business covers municipal water supply, municipal/industrial sewage treatment, reclaimed water reuse, etc. In addition, we play a role in solid waste disposal and sludge treatment among other fields. As of the end of 2021, our subsidiary Goldwind EP has invested and run 68 water projects in total, with a water treatment capacity exceeding 4.23 million tons per day.

<https://www.goldwind.com/en/about/detail/>

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